**Chapter 3 Empirical Formulas and Molecular Formulas**

**Answer keys**

1. A compound is found to be 64.9% carbon, 13.5% hydrogen, and 21.6% oxygen. Its molecular mass is 74 g/mol. What is it molecular formula?

**Answer: C**4**H 10O**

1. The empirical formula of a compound is CH2. Its molecular mass is 70 g/mol. What is its molecular formula?

**Answer: C 5H 10**

1. Determine the empirical formula of a compound containing 2.644 g of gold and 0.476 g of chlorine.

**Answer: AuCl**

1. Find the molecular formula of a compound that contains 30.45 percent nitrogen and 69.55 percent oxygen. The molar mass of the compound is 92.02 g/mol.

**Answer: N**2**O**4

1. A compound is known to have a molar mass of 391.5 g/mol. Find the molecular formula of the compound, given the results of an analysis of a 310.8 g sample that revealed that the sample contains only boron and iodine. The total mole of the iodine in the sample is 2.4 mol.

**Answer: BI**3

1. An oxide of osmium (symbol Os) is a pale yellow solid. If 2.89 g of the compound contains 2.16 g of osmium, what is its empirical formula?

**Answer: OsO**4

1. Determine the molecular formula for each compound below from the information listed.

Substance empirical formula molar mass(g/mol)

a) octane C4H9 114

b)ethanol C2H6O 46

c)naphthalene C5H4 128

d)melamine CH2N2 126

**Answers: a) C8H18 b) C2H6O c) C 10H 8 d) C3H6N6**